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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/428,490	10/28/1999	HIDEKI INA	684.2925	4729

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EXAMINER	
LYONS, MICHAEL A	
ART UNIT	**PAPER NUMBER**
2877	

DATE MAILED: 04/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/428,490	INA ET AL.
	Examiner	Art Unit
	Michael A. Lyons	2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 October 1999 and 17 December 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 19, 2003 has been entered.

Drawings

Figure 1A should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The drawings are objected to under 37 CFR 1.83(a) because they fail to show quarter wave plate 21 in Fig. 1B as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the table or stage disclosed in, for example, claim 19 to move the test object in a desired manner must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

Regarding claims 13, 14, 20, and 21, the word "means" is preceded by the word(s) "light source" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

Regarding claims 13, 19, 20, and 21, the word "means" is preceded by the word(s) "image pickup" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

Regarding claim 15, the word "means" is preceded by the word(s) "light diffusing" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

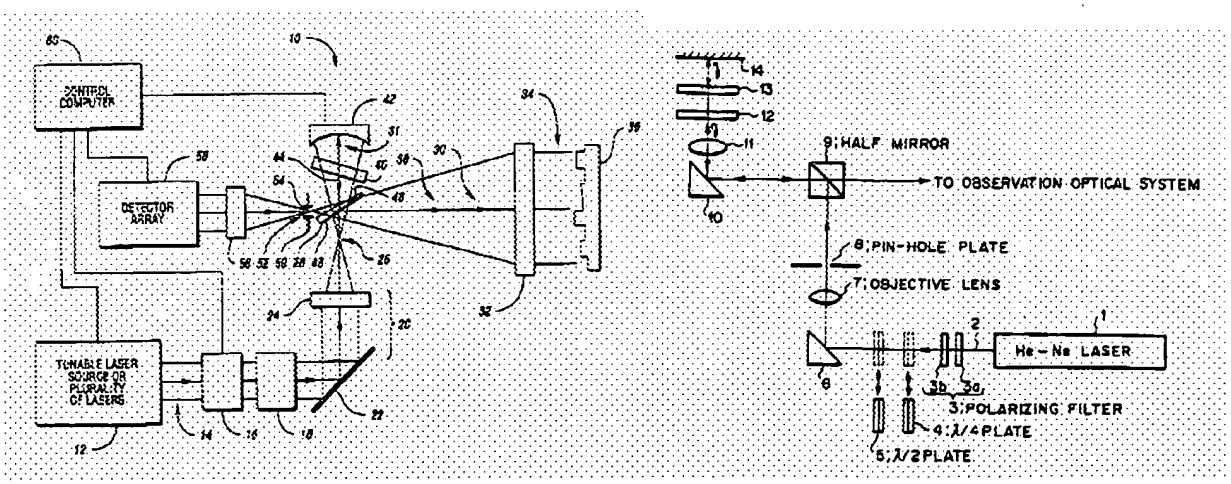
Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 13-14 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marron et al (5,907,404) in view of Hizuka (5,694,217).



Regarding claim 13, Marron (Fig. 1) discloses light source 12, a first optical system containing elements 16, 18, and 22 (where 18 represents beam conditioning optics), a beam splitter 28, a second optical system comprising a collimator 32 and a test object 36, a reflecting mirror 42, and a detector array 58 as image pickup means.

While Marron discloses the use of beam conditioning optics as disclosed above, the reference fails to disclose the explicit use of an optical stop as a beam conditioning optic in the first optical system.

Hizuka (Fig. 1) discloses an interferometer testing system with a pin-hole plate 8 in its first optical system as an optical stop that conditions the initial beam from laser 1 in a desired manner.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to more explicitly define the beam conditioning optics of Marron as an optical stop as per Hizuka in order to facilitate a conditioning of the initial light beam from the light source so the desired light passes through the rest of the system for measurement of the test object.

As to claim 14, Marron discloses laser 12 as a coherent light source.

As to claim 16, while Marron fails to disclose a polarizing beam splitter, Marron does disclose a functionally similar 'normal' beam splitter, along with an aperture stop 50 that blocks unwanted reflections from the beam splitter so that only desired light passes from the beam splitter to the detector array.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polarizing beam splitter and subsequent quarter wave plates in the

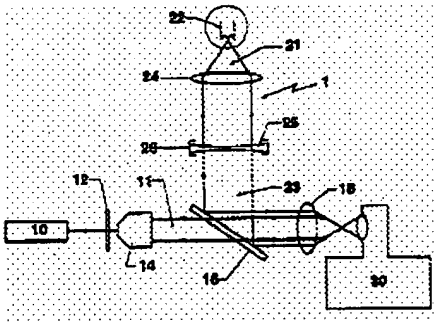
device of Marron, as the polarizing beam splitter would function in the same manner as the 'normal' beam splitter while minimizing the transmission loss generated by the use of the 'normal' beam splitter.

As to claim 17, since the reference and measurement objects of Marron are in the same system, they are optically coupled, and therefore optically conjugate, with each other.

As for claim 18, Marron's light source can also be a plurality of lasers, each laser with its own specific, selected wavelength.

As for claim 19, Marron's test object 36 comprises an uneven surface with several peaks and valleys, any of which could be chosen as a mark on the object. In addition, Marron discloses the detector array as described above as image pickup means. While it does not disclose the exact functionality as claimed in the "operable to" statement, its presence in device is enough for it to read on the present claims; the functionality of the device is not patentably distinct.

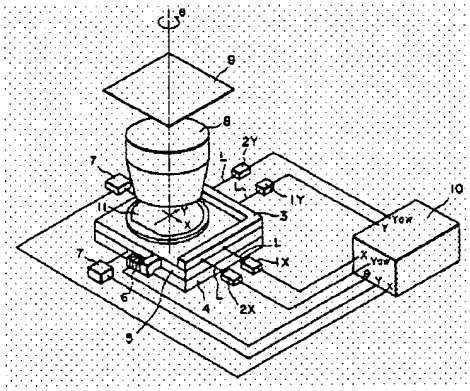
Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marron et al (5,907,404) in view of Hizuka (5,694,217) and in further view of Riccobono et al (5,416,587).



As to claim 15, the beam conditioning optics of Marron fail to explicitly disclose the use of a diffuser. Riccobono (Fig. 1), however, discloses the use of a diffuser 12 in conjunction with beam expander 14 as beam conditioning optics.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a diffuser as part of the beam conditioning optics of Marron as per Riccobono, as the diffuser will degrade the spatial coherence of the incoming laser light, generating a more uniform wavefront for application in the device.

Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marron et al (5,907,404) in view of Hizuka (5,694,217) and in further view of Yamane et al (5,523,843).



Regarding claim 20, the combination of Marron in view of Hizuka as disclosed above with regard to claim 13 describes the position detecting means. However, the combination fails to disclose exposure means for performing a standard etching procedure on a workpiece.

Yamane (Fig. 1), however, discloses a projection lens system 8 for projecting a pattern of reticle 9 upon a wafer 11.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the projection system of Yamane to the combination of Marron in view of Hizuka as an exposure apparatus, as the process of exposing and etching the wafer is a well known process and is a separate process from actually measuring the position of a mark on the etched wafer.

Regarding claim 21, while the combination above fails to disclose the exact method claimed, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the claimed method to the claimed apparatus of the previous claim, as applying the claimed method to an apparatus that reads on the present claim would achieve the desired results from the performance of the method.

Response to Arguments

Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection based on the new claims in the amendment filed August 19, 2003.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Pat. 5,349,440, an interferometric laser profilometer including a multimode laser diode emitting a range of stable wavelengths to DeGroot and US Pat. 5,991,034 to Ohtsuka, an interferometer which varies a position to be detected based on inclination of surface to be measured.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Lyons whose telephone number is 571-272-2420. The examiner can normally be reached on Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAL
March 29, 2004

Samuel A. Turner
Primary Examiner